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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/781,960	02/14/2001	Martin Hartung	1860/49624	9752

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EXAMINER
LEE, JOHN D

ART UNIT	PAPER NUMBER
2874	

DATE MAILED: 03/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 09/781,960	Applicant(s) HARTUNG, MARTIN
	Examiner John D. Lee	Art Unit 2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 January 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28 and 31-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *31* is/are allowed.

6)☒ Claim(s) *1-28 and 32-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 February 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Applicant's communication, filed on January 21, 2003, has been carefully considered by the Examiner. The certified copy of applicant's foreign priority document has been received and made of record. With respect to the previously applied prior art rejections of the claims based upon the U.S. Patent to Brown, applicant's arguments are persuasive and those rejections are hereby withdrawn. It is clear from applicant's claim language, from the drawings and description in the specification, from the demonstration given during the interview on January 17, 2003, and from the comments in the January 21, 2003, amendment, that the "light wave converter" is a separate and distinct element from the "light guide" in the claimed assembly. In the Brown reference, the "light wave converter" and the "light guide" are one and the same. Though the Examiner does not agree that "white light" is not produced at an output port by the mixing of converted and unconverted wavelengths in Brown, the Examiner concedes that a person of ordinary skill in the art would not have been motivated (from the disclosure and teachings of Brown) to modify the patented apparatus so that the light wave converter is a separate and distinct element from the light guide. The previously applied 35 U.S.C. § 103(a) rejections are therefore withdrawn. Regarding the previously applied 35 U.S.C. § 112 rejection, applicant's amendment has obviated the identified problems, but has introduced a different problem in claim 14. A new 35 U.S.C. § 112 rejection is thus set forth below. In view of further search by the Examiner, and the consequent discovery of previously uncited prior art documents, a new rejection is applied to most of the pending claims. This action is **not** made final.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim 14 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The deletion made by amendment on January 21, 2003, has made this claim incomplete; it now fails to identify what happens when the converter substance is optically excited. The claim is thus indefinite. For examination purposes, it will be assumed that the converter substance, when optically excited, "can luminesce".

Claims 1-28 and 32-34 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,504,301 to Lowery (newly cited) in view of U.S. Patent 6,333,943 to Yamamoto et al (newly cited). Applicant's claimed assembly constitutes a light wave converter in combination with a light guide, wherein the light wave converter exhibits a converter substance which converts a part of incident light into light of a longer wavelength, the converted light being guided together with a portion of the unconverted light to an output, where such mixed light yields "white light". Lowery discloses the same light wave converter principle, albeit without an associated light guide. In column 6, lines 6-32, Lowery discloses a fluorescent plate to which is input blue light (wavelength of 460-480 nm) and which converts the blue light to light of a longer wavelength (approximately 520 nm) through luminescence/fluorescence, the combination of the converted emission together with the remaining blue light (i.e. the unconverted blue light) creates a final output with "color rendering that duplicates

natural white light" (column 6, lines 31-32). Lowery thus discloses the gist of applicant's claimed invention. In applicant's claims, it is noted that the "light guide" is simply an added element; there is no claimed functionality for the light guide with respect to the light wave converter element. The use of light wave converter elements in association with optical light guides is well known, as shown by Yamamoto et al in figures 26 and 33. It would therefore have been obvious, to a person of ordinary skill in the art at the time of applicant's invention, to have included a light guide in combination with the light wave converter of Lowery, since Lowery's light source could clearly be used as a source transmitted through light guides for many applications. Note that the wavelength range of the incident light in Lowery (460-480 nm) is right in the middle of applicant's claimed range. There are no bandpass filters or brightness controllers disclosed in Lowery, but these are add-on elements that are used to tailor an optical output for a particular application. As such, their addition to the Lowery/Yamamoto et al device would have been obvious. The LED which serves as the source of incident light in Lowery could be termed a "polymerization lamp" (Examiner's note" since "polymerization lamp" is not an art-recognized term, it is assumed that this is merely a light source that emits at a wavelength ordinarily used to polymerize organic compounds). Notice that the fluorescing wavelength-converting substances used in Lowery include lanthanide elements (e.g. Gd and Ce). The light guides shown in Yamamoto et al (figures 26 and 33) are certainly flexible, but the size of any exit port thereof is not disclosed. Applicant's claimed size (1 to 10 mm) is typical, however, and choice of such a size for any exit ports of the Yamamoto et al light guides would have

been obvious. There would clearly be a "coupling" involved at the point where the proposed light wave converter and light guide meet. The weight percentages of the fluorescing substances (dopants) in Lowery are not specified, but would clearly be of such value to provide good wavelength conversion. The percentage range set forth by applicant in claim 25 would thus have been obvious in Lowery. Characterization of the claimed assembly as a "hot steam sterilized assembly" does not alter its claimed structural elements; this is rather a process-like limitation that refers to something that is done to the assembly of elements. Such a limitation thus has no bearing on the patentability of the claimed assembly, and to characterize the Lowery/Yamamoto et al assembly as a "hot steam sterilized assembly" would certainly be obvious. If a "polymerization lamp" were used as the source of incident light in Lowery, the proposed device of Lowery/Yamamoto et al could, by definition, be a "module" of such lamp. With respect to claims 32-34, the phrase "for use in dental procedures" has no bearing on the patentability of the claimed assembly of elements; the assembly of elements must be evaluated with respect to prior art assemblies – not with respect to where the assembly may or may not be used.

Claim 31 is allowable over the prior art of record. This claim represents a dental *process* which is neither disclosed nor suggested by the prior art of record. In particular, step c) of the claimed process (illuminating or transilluminating hard tooth substance) would not have been obvious from Lowery, Yamamoto et al, or any other prior art of record.

Applicant's arguments with respect to claims 1-28 and 31-34 have been considered but are moot in view of the new ground(s) of rejection. Refer to the first paragraph in this Office action.

Any inquiry concerning the merits of this communication should be directed to Examiner John D. Lee at telephone number (703) 308-4886. The Examiner's normal work schedule is Tuesday through Friday, 6:30 AM to 5:00 PM. Any inquiry of a general or clerical nature (i.e. a request for a missing form or paper, etc.) should be directed to the Technology Center 2800 receptionist at telephone number (703) 308-0956, to the technical support staff supervisor (Team 2) at telephone number (703) 308-3072, or to the Technology Center 2800 Customer Service Office at telephone number (703) 306-3329.

John D. Lee
Primary Patent Examiner
Group Art Unit 2874